

WE CLAIM:

- 1.) A phase-locked loop circuit comprising:
a direct frequency control section adapted to provide at least one coarse adjustment to a control voltage associated with a voltage controlled oscillator.
- 2.) The circuit as in claim 1 wherein the section comprises switches adapted to connect and disconnect the section from a frequency synthesis section.
- 3.) The circuit as in claim 1 wherein the section comprises an integrated circuit.
- 4.) The circuit as in claim 1 wherein the section comprises a first tuning section adapted to produce at least one amplified voltage signal.
- 5.) The circuit as in claim 4 wherein the direct frequency control section further comprises a second tuning section adapted to sense at least one control voltage associated with the oscillator.
- 6.) The circuit as in claim 4 wherein the first tuning section comprises a digital-to-analog converter and a first operational amplifier.
- 7.) The circuit as in claim 5 wherein the second tuning section comprises an analog-to-digital converter and a second operational amplifier.

- 8.) The circuit as in claim 1 wherein the section comprises a look-up table adapted to store at least one frequency versus voltage response.
- 9.) The circuit as in claim 1 further comprising a frequency synthesis section adapted to provide at least one fine-tuning adjustment to the control voltage.
- 10.) The circuit as in claim 1 wherein the direct frequency control section comprises:
- a first tuning section adapted to produce a plurality of amplified voltage signals:
- and
- a second tuning section adapted to sense a plurality of control voltages, each control voltage associated with one of the amplified voltage signals.
- 11.) A method for improving the switching time of a phase-locked loop comprising:
- providing a coarse adjustment to at least one control voltage associated with a voltage controlled oscillator.
- 12.) The method as in claim 11 further comprising connecting and disconnecting a direct frequency control section from a frequency synthesis section.
- 13.) The method as in claim 11 further comprising producing at least one amplified voltage signal.

- 14.) The method as in claim 13 further comprising sensing at least one control voltage associated with the oscillator.
- 15.) The method as in claim 11 further comprising storing at least one frequency versus voltage response.
- 16.) The method as in claim 11 further comprising providing at least one fine-tuning adjustment to the control voltage.
- 17.) The method as in claim 11 further comprising:
- producing a plurality of amplified voltage signals; and
- sensing a plurality of control voltages, each control voltage associated with one of the amplified voltage signals.